

IN THE CLAIMS:

Please CANCEL claims 2, 8-11, 13, and 17-20 without prejudice or disclaimer;

Please AMEND claims 1, 3-7, 12, and 14-16; and

Please ADD new claims 21-23 as follows:

1. (Currently Amended) A method, comprising:

authenticating a mobile node by an access router;

authorizing the mobile node to participate in a candidate access router discovery procedure;

maintaining, by ~~the each of a plurality of~~ access routers within a mobile internet protocol environment, a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and their associated access points of the neighboring access routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

populating ~~the each~~ cache with a cache entry in response to a handover actions of the initiated by mobile nodes, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over,

wherein ~~the each~~ cache entry is tagged with authentication information ~~an identity of the action initiating mobile node, which identity is based on information that is~~

~~verifiable by the access routers and which cannot be modified arbitrarily by the mobile node, and~~

wherein a total number of cache entries that can be tagged and thus introduced into ~~thea~~ cache by ~~theany given~~ mobile node is limited.

2. (Cancelled)

3. (Currently Amended) The method according to claim 1, wherein the ~~identity of the mobile node is~~ authenticated by using at least one of an international mobile subscriber identity for cellular communication systems; and a network access identifier for systems based on internet protocol.

4. (Currently Amended) The method according to claim 1, ~~wherein an action initiated by a mobile node comprises a handover procedure of the mobile node between a previous access router and a new access router, said method further comprising:~~

~~generating a token by the previous access router;~~

~~sending the token from the previous access router to the mobile node within a message comprising a list of candidate access routers;~~

receiving ~~asending~~ the token within a message specific to ~~thea~~ candidate access router discovery procedure from the mobile node ~~byto the new~~ access router as a selected handover candidate after ~~atthe~~ handover procedure of the mobile node between a previous

access router and the access router, wherein the token is generated by the previous access router and is sent from the previous access router to the mobile node within a message comprising a list of candidate access routers; and

sending the token within a neighbor exchange between the access routers resulting in cache entries being created or refreshed from the second access router back to the previous first access router for verification, wherein the access routers are configured to one of create and refresh cache entries concerning the respective other access router, the capabilities of the respective other access router, and the associated access point of the respective other access router.

5. (Currently Amended) The method according to claim 4,

wherein the token is generated by maintaining by the previous access router a short list of random values used as keys to hash the identity of the mobile node,

wherein each key in the short list is associated with an integer index that is passed along with the token, and

wherein upon receiving the token for verification, the previous access router uses the integer index to lookup the associated key, hash the identity of the mobile node sent in the neighbor exchange, and compares the hash to the token.

6. (Currently Amended) The method according to claim 5, wherein with progressing time new keys are generated and added to the head of the list while old keys

are expired and removed so that from the length of the list and the frequency of the generated new keys, the total amount of time the a mobile node has been attached is determined.

7. (Currently Amended) A system, comprising:

a plurality of access routers within a mobile internet protocol environment, each of the access routers configured to authenticate a mobile node, to authorize the mobile node to participate in a candidate access router discovery procedure, and to maintain a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and their associated access points of the neighboring access routers, wherein the access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

a plurality of mobile nodes, each of the mobile nodes configured to perform a handover which are capable of populating the caches in response to actions between the access routers initiated,

wherein the cache is configured to be populated with a ~~such that each~~ cache entry in response to the handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the cache is further configured to ~~is~~ tagged the cache entry with authentication information ~~an~~ identity of the handover action performing ~~initiating~~ mobile node ~~having thus created the~~

entry, and to limit that a total number of entries that can be tagged and thus introduced into the cache by any given mobile node is limited.

8-11. (Cancelled)

12. (Currently Amended) An apparatus, comprising:

a first controller configured to authenticate a mobile node;

a second controller configured to authorize the mobile node to participate in a candidate access router discovery procedure; and

a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and their-associated access points of the neighboring access routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas;

wherein the cache is configured to be populated with such that each a cache entry in response to a handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the cache is further configured to tag the cache entry with authentication information an identity of the handover action performing a mobile node having initiated the entry creation, and to limit that the total number of entries that can be tagged and thus introduced into the cache by any given mobile node is limited.

13. (Cancelled)

14. (Currently Amended) The apparatus according to claim 12, further comprising:

~~a generator configured to generate a token;~~

~~a first transmitter configured to send the token to a mobile node within a message comprising a list of candidate access routers;~~

a receiver configured to receive a token within a message specific to the candidate access router discovery procedure from the mobile node after a handover procedure of the mobile node between a previous access router and the access router, wherein the previous access router is configured to generate the token and to send the token to the mobile node within a message comprising a list of candidate access routers; and

a second transmitter configured to send the token within a neighbor exchange with the previous~~another~~ access router for verification, wherein a cache entry concerning the previous access router, the capabilities of the previous access router, and the associated access point of the previous access router is one of ~~resulting in cache entries being~~ created ~~and~~ refreshed, and wherein the previous access router comprises a verifier configured to verify the token.

~~a verifier configured to verify the token.~~

15. (Currently Amended) The apparatus according to claim 14,
wherein the previous access router~~generator~~ comprises a first hashing unit configured to hash the identity of the mobile node by using random values out of a short list as keys, and an associating unit configured to associate each key in the list with an integer index, and
wherein the verifier comprises a lookup table for ~~the~~ integer indices and their associated keys, a second hashing unit configured to hash the identity of the mobile node and a comparing unit configured to compare the hash to the token.

16. (Currently Amended) The apparatus according to claim 15, wherein the previous access router~~generator~~ is configured to generate new keys with progressing time, to add the new keys~~m~~ to the head of the list, and to remove old keys.

17-20. (Cancelled)

21. (New) The apparatus according to claim 16, further comprising:
a determiner configured to determine a total amount of time a mobile node has been attached from the length of the list and the frequency of the generated new keys.

22. (New) A computer program, embodied on a computer readable medium, for controlling a processor to implement a method, the method comprising:

authenticating a mobile node by an access router;

authorizing the mobile node to participate in a candidate access router discover procedure;

maintaining, by the access router within a mobile internet protocol environment, a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the neighboring access routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

populating the cache with a cache entry in response to a handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, wherein the cache entry is tagged with authentication information of the mobile node, and wherein a total number of cache entries that can be tagged and thus introduced into the cache by the mobile node is limited.

23. (New) An apparatus, comprising:

authentication means for authenticating a mobile node;

authorization means for authorizing the mobile node to participate in a candidate access router discovery procedure;

caching means for storing neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the

neighboring access routers, wherein access routers are considered neighbors only if they comprise access points with overlapping coverage areas;

wherein the caching means is configured to be populated with a caching means entry in response to a handover action of the mobile node, wherein the caching means entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the caching means is further configured to tag the caching means entry with authentication information of the handover action performing mobile node, and to limit a total number of entries that can be tagged and thus introduced into the caching means by any given mobile node.